UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/078,805	02/18/2002	James S. Stefely	51737US019	7639

32692 7590 06/12/2008
3M INNOVATIVE PROPERTIES COMPANY
PO BOX 33427
ST. PAUL, MN 55133-3427

EXAMINER	
FISHER, ABIGAIL L	

ART UNIT	PAPER NUMBER
1616	

NOTIFICATION DATE	DELIVERY MODE
06/12/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

LegalUSDocketing@mmm.com
LegalDocketing@mmm.com

Office Action Summary	Application No.	Applicant(s)	
	10/078,805	STEFELY ET AL.	
	Examiner	Art Unit	
	ABIGAIL FISHER	1616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 February 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *42,44-52,55 and 57-87* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *42, 44-52, 55, 57-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The examiner for your application in the USPTO has changed. Examiner Abigail Fisher can be reached at 571-270-3502.

Receipt of Amendments/Remarks filed on February 11 2008 is acknowledged. Claims 1-41, 43, 53-54, 56 and 88-188 were/stand cancelled. Claims 42, 46 and 81-82 are amended. Claims 42, 44-52, 55 and 57-87 are pending.

It is noted that the status of claim 45 is indicated as withdrawn however this claim is not withdrawn and is included in those claims that currently under examination.

Rejections and/or objections not reiterated from previous office actions are hereby withdrawn. The following rejections and/or objections are either reiterated or newly applied. They constitute the complete set presently being applied to the instant application.

Claim Objections

Claims 81 and 82 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claims 81 and 82 depend from claim 42. Claim 42 claims that the amount of a biocompatible polymer is at least four times the amount of drug on a weight to weight basis. However claim 81 claims that the biocompatible polymer is present in an amount

from about 1:1 to about 100:1 ratio by eight of biocompatible polymer to drug. In claim 82 the ratio is 2:1 to 30:1. The lower limit of the ratios of claims 81 and 82 broaden the scope of claim 42, therefore these claims fail to further limit the subject matter of a previous claim.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 47-49, 52, 61-66, 68-73, 80 and 83-86 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 47-48, 65-66, 68, 72-73, 80, and 83 as currently written are vague and indefinite. The claims contain the phrase "at least about". This phrase is vague and indefinite because it is unclear what constitutes the lower limit of the range. For example, in claim 47 is the lower limit at least 1.5 or is the lower limit about 1.5?

Claims 49, 52, 61-64, 69-71 and 84-86 as currently written are vague and indefinite. The claims contain the phrase "no greater than about". This phrase is vague and indefinite because it is unclear what constitutes the upper limit of the range. For example, in claim 49 is the upper limit at least 25 or is the upper limit about 25?

Claims 65 and 66 additionally are confusing. It is unclear what constitutes the upper limit of the units with respect to claim 61. Claim 65 depends from claim 61.

Claim 61 claims that the units are present in an amount not greater than 70, however claim 65 indicates that the length is at least 5. At least 5 includes amounts greater than 70. Therefore, it is unclear what the upper limit of instant claims 65 and 66 are being claimed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Applicant Claims
2. Determining the scope and contents of the prior art.
3. Ascertaining the differences between the prior art and the claims at issue, and resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 42, 44-51, 55, 67, 74-77, and 79-87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Patton (US Patent No. 5607915, cited in the Office action mailed on 10/9/07).

Applicant Claims

Applicant claims a sustained release aerosol formulation comprising: a propellant, a therapeutically effective amount of a drug, and a sufficient amount of a biocompatible polymer, at least four times the amount of the drug on a weight to weight basis, dissolved in the formulation so as to provide for sustained release of the drug; wherein the sustained release formulation results in discrete, nonfilm forming particles upon delivery, and wherein the formulation is contained in a metered does inhaler for oral and/or nasal inhalation, and wherein the biocompatible polymer comprises at least one chain having a plurality of units of the formula:

$$-[X\text{-}R^1\text{-}C(O)]-$$ wherein:

R^1 is an independently selected straight chain, branched chain, or cyclic organic group containing 1-6 carbon atoms optionally containing carbonyl groups, oxygen atoms, thio groups, or caternary nitrogen atoms that links the X group to the carbonyl group; and each X is independently oxygen, sulfur, or caternary nitrogen.

Determination of the Scope and Content of the Prior Art (MPEP §2141.01)

Patton is directed to pulmonary delivery of active fragments. The active fragments are parathyroid hormone (PTH) fragments of 1-34 and 1-38 amino acids

(column 1, lines 19-21). Patton discloses dry powder devices that comprise 1- to 10% of a bulking powder, human serum albumin (column 5 lines 41-47). It is disclosed that for MDI's (metered dose inhalers) that the PTH fragments will be dissolved or suspended in a suitable aerosol propellant such as chlorofluorocarbon propellants (column 6, lines 10-17). For incorporation into the aerosol propellant, the PTF fragments will be processed into respirable particles as described for the dry powder formulations. These particles are suspended in the propellant (column6, lines 18-22). The aerosol propellant formulations further can include a lower alcohol such as ethanol (column 6, lines 26-29). The PTH fragment will be present in amount from about 1 to 25% by weight (column 6, lines 64-65). It is disclosed that when an intratracheally (IT) formulation was compared to an intravenously (IV) formulation the same dose exhibited a very different absorption profile. Instead of a spike, a plateau in serum levels occurred that did not diminish significantly during the 90 minutes of the experiment. The slow sustained release absorption profile suggests that the serum levels would have persisted for longer times (column 8, lines 18-26).

Ascertainment of the Difference Between Scope the Prior Art and the Claims *(MPEP §2141.012)*

Patton does not exemplify a MDI formulation comprising PTH fragments and HSA. Patton does not specify that the amount of HSA is at least four times the amount of drug on a weight to weight basis. However, Patton does indicate that for incorporation into the aerosol propellant, the PTF fragments will be processed into respirable particles as described for the dry powder formulations. These particles are suspended in the propellant

Finding of Prima Facie Obviousness Rational and Motivation (MPEP §2142-2143)

It would have been obvious to one of ordinary skill in the art to formulate a MDI comprising PTH fragments and HSA. One of ordinary skill in the art would have been motivate to formulate this type of formulation because Patton teaches that the dry powder formulations are suspended in the propellant for aerosol formulations.

Regarding the ratio of HSA to PTH fragments; it would have been obvious to one of ordinary skill in the art to optimize the amount of HSA. It would have been obvious to one of ordinary skill in the art at the time of the invention to engage in routine experimentation to determine optimal or workable ranges that produce expected results.

Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. **In re Aller, 220 F. 2d 454, 105 USPQ 233 (CCPA 1955).** For proper citation, the name of the case is either italized or underlined.

Formatted: Underline

Formatted: Underline

Regarding the claimed polydispersity, since HSA is an endogenous polypeptide chain, the corresponding polydispersity would necessarily be less than instantly claimed.

Regarding the functional limitation that the therapeutic activity of the drug is increased by a factor of at least 1.5 (or 30 minutes) relative to the period of activity of the same formulation but without the biocompatible polymer, Patton is silent as to this activity. However, Patton does disclose that the IT formulations are sustained release. It is the examiner's position that the therapeutic activity of the formulation would necessarily have increased activity when compared to the formulation without the

polymer. It incumbent on Applicant to demonstrate that the invention of Patton would not result in the instantly claimed functional limitations.

Absent any evidence to the contrary, and based upon the teachings of the prior art, there would have been a reasonable expectation of success in practicing the instantly claimed invention. Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Response to Arguments

Applicant argues that albumin is only described in connection with dry powder formulations not propellant-based formulation. Applicant argues that Patton does not disclose or suggest utilizing a biocompatible polymer to achieve sustained release of drug from an HFA MDI formulation.

Applicant's arguments filed February 11 2008 have been fully considered but they are not persuasive. Patton discloses that for MDIs (metered dose inhalers); the PTH fragments will be dissolved or suspended in a suitable aerosol propellant such as chlorofluorocarbon propellants (column 6, lines 10-17). For incorporation into the aerosol propellant, the PTF fragments will be processed into respirable particles **as described for the dry powder formulations**. These particles are suspended in the propellant (column 6, lines 18-22). Therefore, Patton does disclose utilizing HSA in connection with MDIs, as Patton indicates that for incorporation into the aerosol propellant the PTF fragments will be processed as described for the dry powder formulations.

In response to applicant's argument that Patton does not disclose or suggest utilizing a biocompatible polymer to achieve sustained release of drug, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Specifically Patton discloses utilizing HSA, a biocompatible polymer, in connection with MDIs, as Patton indicates that for incorporation into the aerosol propellant the PTF fragments will be processed as described for the dry powder formulations. The IT compositions produce a sustained release profile.

Claims 42, 44-51, 55 and 57-60, 67-68 and 76-87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boyes et al. (US Patent No. 5384133) in view of Baker (US Patent No. 4670250).

Applicant Claims

Applicant claims a sustained release aerosol formulation comprising: a propellant, a therapeutically effective amount of a drug, and a sufficient amount of a biocompatible polymer, at least four times the amount of the drug on a weight to weight basis, dissolved in the formulation so as to provide for sustained release of the drug; Wherein the sustained release formulation results in discrete, nonfilm forming particles upon delivery, and wherein the formulation is contained in a metered does inhaler for

oral and/or nasal inhalation, and wherein the biocompatible polymer comprises at least one chain having a plurality of units of the formula:

$$-[X-R^1-C(O)]-$$ wherein:

R^1 is an independently selected straight chain, branched chain, or cyclic organic group containing 1-6 carbon atoms optionally containing carbonyl groups, oxygen atoms, thio groups, or caternary nitrogen atoms that links the X group to the carbonyl group; and each X is independently oxygen, sulfur, or caternary nitrogen.

Determination of the Scope and Content of the Prior Art (MPEP §2141.01)

Boyes et al. is directed to pharmaceutical formulations comprising a microcapsule consisting of a biocompatible polymer wall material encapsulating a drug and a surfactant (abstract). The formulation is suitable for inhalation (column2, lines 35-36). The drug encapsulated may be any agent which exhibits a pharmacological effect (column 3, liens 1-2). Examples of actives include terbutaline (column 3, line 18). The amount of active is from 1 to as high as 95% (column 3, line 28). The biocompatible polymer material is selected from poly(glycolic acid) poly-d, l-lactic acid copolymers thereof, polycaprolactone, poly(lactic acid-caprolactone) and the like (column 3, lines 43-45). The molecular weight is greater than 10,000 daltons. A fine suspension of the microparticles may be taken into the lungs of a patent. Typically, the aerosol canister or inhaler allows a metered dose of the drug to be inhaled. This is generally achieved by the provision of a valve which meters the amount of the formulation (column 4, liens 58-62). Exemplified is an example of the preparation of terbutaline microcapsules and their use in aerosols (example 3). Propellants exemplified include hydrofluorocarbons

(example 3). It is disclosed that the exemplified aerosols were capable of prolonging the effect of the drug on sGaw (column 9, lines 28-30). Table 2 indicates that Aerosol No. exhibited the same release profile after 420 minutes (7 hours) as it did at 120 minutes.

Ascertainment of the Difference Between Scope the Prior Art and the Claims *(MPEP §2141.012)*

Boyes et al. does not specify an amount of biocompatible copolymer to utilize. However, this deficiency is cured by Baker.

Baker discloses that the release rate of an active ingredient is determined by the permeability of the polymeric shell to the active ingredient and the thickness of the polymeric shell which is in turn determined by the ratio of core or active ingredient to polymer. The range of ratio of core or active discovered to yield controlled-release microcapsules is from about 4:1 to about 1:4 by weight. The ratio results in sustained release of the active ingredient.

Finding of Prima Facie Obviousness Rational and Motivation (MPEP §2142-2143)

It would have been obvious to one of ordinary skill in the art to combine the teachings of Boyes et al. and Baker and utilize a polymer to drug ratio of 4:1. One of ordinary skill in the art would have been motivated to utilize this ratio as Baker teaches that is a suitable ratio to produce a sustained release of an active ingredient.

Regarding the other claimed ratios of polymer to drug, it would have been obvious to one of ordinary skill in the art to modify the thickness of the polymer encapsulating the drug to change the release profile of the active as taught by Baker.

Depending on the active the active agent utilized it would have been obvious to one of ordinary skill in the art to modify the release profile to optimize the amount of drug released and the relative times of the drug released. It would have been obvious to one of ordinary skill in the art at the time of the invention to engage in routine experimentation to determine optimal or workable ranges that produce expected results. Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. **In re Aller, 220 F. 2d 454, 105 USPQ 233 (CCPA 1955).**

Regarding the functional limitation that the therapeutic activity of the drug is increased by a factor of at least 1.5 (or 30 minutes) relative to the period of activity of the same formulation but without the biocompatible polymer, Boyes et al. is silent as to this activity. However, Boyes et al. does disclose the same claimed polymers and that the formulations in Table 2 exhibited sustained release profiles. It is the examiner's position that the therapeutic activity of the formulation would necessarily have increased activity when compared to the formulation without the polymer. It incumbent on Applicant to demonstrate that the invention of Boyes et al. would not result in the instantly claimed functional limitations.

Regarding the biological half life of the polymer and polydispersibility, Boyes et al. discloses the same polymers as instantly claimed. Therefore, the half-life and polydispersibility would necessarily be the same. It incumbent on Applicant to demonstrate that the polymers of Boyes et al. would not result in the instantly claimed half-life or possess the same polydispersibility.

Absent any evidence to the contrary, and based upon the teachings of the prior art, there would have been a reasonable expectation of success in practicing the instantly claimed invention. Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Claims 74 and 75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boyes et al. in view of Baker and in further view of Patton.

Applicant Claims

Applicant claims that the formulation further comprises a co-solvent. One particular species claimed is ethanol.

Determination of the Scope and Content of the Prior Art (MPEP §2141.01)

The teachings of Boyes et al. and Baker are set forth above. Boyes et al. is directed to microcapsules that can be delivered via inhalation.

Ascertainment of the Difference Between Scope the Prior Art and the Claims *(MPEP §2141.012)*

Boyes et al. do not specify that a cosolvent can be added in the aerosol formulation. However, this deficiency is cured by Patton.

Patton discloses that aerosol propellant formulations further can include a lower alcohol such as ethanol and other additives to maintain or enhance chemical stability and physiological acceptability (column 6, lines 26-29).

Finding of Prima Facie Obviousness Rational and Motivation (MPEP §2142-2143)

It would have been obvious to one of ordinary skill in the art to combine the teachings of Boyes et al., Baker, and Patton and utilize ethanol as a cosolvent in the aerosol formulation. One of ordinary skill in the art would have been motivated to add ethanol as Patton teaches it an additive that is utilized to maintain or enhance chemical stability and physiological acceptability in aerosol propellant formulations.

Absent any evidence to the contrary, and based upon the teachings of the prior art, there would have been a reasonable expectation of success in practicing the instantly claimed invention. Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Claims 52, 61-66 and 69-73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boyes et al. in view of Baker and in further view Hunter et al. (US Patent No. 5716981).

Applicant Claims

Applicant claims that the molecular weight of the polymer is no greater than about 5000 (or 1800 or 1200). Applicant claims that the biocompatible polymer has an average chain length of no greater than 70 (or 25 or 16 or 11) of said units.

Determination of the Scope and Content of the Prior Art (MPEP §2141.01)

The teachings of Boyes et al. and Baker are set forth above. Boyes et al. is directed to microcapsules that can be delivered via inhalation. The microcapsules comprise biocompatible polymers.

Ascertainment of the Difference Between Scope the Prior Art and the Claims *(MPEP §2141.012)*

Boyes et al. do not specify that the molecular weight is no greater than 5000 or 1800 or 1200. However, this deficiency is cured by Hunter et al.

Hunter et al. discloses that low molecular weight polymers such as poly(DI-lactic acid) give fast degradation ranging from one day to a few months depending on its initial molecular weight. Therefore, the release of the active is dominated by polymer degradation (column 77, lines 43-46). Low molecular weight poly (DL-lactic acid) was synthesized via polycondensation. After 40 minutes the molecular weigh was 800 (column 78, line 6). The polymer formed after 40 minutes broke up into fragments within one day (column 78, lines 45-46). Also not specifically set forth, it is disclosed that a wide variety of other low molecular weight (500-10,000) polymers can be synthesized including poly(glycolic acid) (column 78, lines 58-61).

Finding of Prima Facie Obviousness Rational and Motivation (MPEP §2142-2143)

It would have been obvious to one of ordinary skill in the art to combine the teachings of Boyes et al., Baker, and Hunter et al. and utilize a lower molecular weight polymer. One of ordinary skill in the art would have been motivated to utilize a lower molecular weight polymer depending on the release profile desired as lower molecular weight polymers are known to result in faster degradation as taught by Hunter et al. Therefore, when a faster degradation time is desired it would have been obvious to one of ordinary skill in the art to utilize low molecular weight polymers.

It would have been obvious to one of ordinary skill in the art to optimize the length of the polymer change in order to optimize the release profile of the active. It would have been obvious to one of ordinary skill in the art at the time of the invention to engage in routine experimentation to determine optimal or workable ranges that produce expected results. Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. **In re Aller, 220 F. 2d 454, 105 USPQ 233 (CCPA 1955).**

Absent any evidence to the contrary, and based upon the teachings of the prior art, there would have been a reasonable expectation of success in practicing the instantly claimed invention. Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Omum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 42, 44-52, 55 and 57-87 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-5, 8- of U.S. Patent No. 7186402 in view of Baker et al. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims overlap in scope.

The instant application claims a sustained release aerosol formulation comprising: a propellant, a therapeutically effective amount of a drug, and a sufficient amount of a biocompatible polymer, at least four times the amount of the drug on a weight to weight basis, dissolved in the formulation so as to provide for sustained release of the drug; Wherein the sustained release formulation results in discrete, nonfilm forming particles upon delivery, and wherein the formulation is contained in a metered does inhaler for oral and/or nasal inhalation, and wherein the biocompatible polymer comprises at least one chain having a plurality of units of the formula:

$$-[X\text{-}R^1\text{-}C(O)]-$$ wherein:

R^1 is an independently selected straight chain, branched chain, or cyclic organic group containing 1-6 carbon atoms optionally containing carbonyl groups, oxygen atoms, thio groups, or caternary nitrogen atoms that links the X group to the carbonyl group; and each X is independently oxygen, sulfur, or caternary nitrogen.

Patent '402 claims an aerosol composition comprising a propellant comprising a hydrofluorocarbon, a drug, and an excipient comprising a compound of the structure X-

R_1-Y-Z. Patent '402 claims that the composition further comprises a cosolvent. Patent '402 claims that the therapeutic activity of the drug is increased by a factor of at least about 1.5 relative to the period of activity of the same composition with respect to the propellant and drug but without excipient. A solution and suspension of the drug is also claimed.

Neither the instant application nor Patent '402 claim a specific polymer or excipient respectively. Species envisioned for the instant application overlap with those of Patent '402.

Patent '402 does not claim that amount of excipient is at least 4 times the drug. However, this deficiency is cured by Baker et al.

Baker discloses that the release rate of an active ingredient is determined by the permeability of the polymeric shell to the active ingredient and the thickness of the polymeric shell which is in turn determined by the ratio of core or active ingredient to polymer. The range of ratio of core or active discovered to yield controlled-release microcapsules is from about 4:1 to about 1:4 by weight. The ratio results in sustained release of the active ingredient.

It would have been obvious to one of ordinary skill in the art to combine the teachings of Patent '402 and Baker and utilize a polymer to drug ratio of 4:1. One of ordinary skill in the art would have been motivated to utilize this ratio when desiring a sustained release profile as Baker teaches that is a suitable ratio to produce a sustained release of an active ingredient.

Therefore, the scopes of the copending claims overlap and thus they are obvious variants of one another.

Claims 42, 44-52, 55 and 57-87 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-36 and 39-41 of U.S. Patent No. 5569450 Baker et al. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims overlap in scope.

The instant claims are set forth above.

Patent '450 claim a medicinal aerosol formulation comprising a dispersing aid comprising a compound comprising a chain of units of the formula $-X-R_1-C(O)-$, A propellant and a therapeutically effective amount of a particulate drug. Species of the compound for the units include glycolic acid, trimethylene carbonate, and lactic acid which are the same as instantly claimed. The average chain length is of six to 12. The aerosol canister is equipped with a metered dose valve.

Patent '450 does not claim that the dispersing aid is present in an amount four times the drug. However this deficiency is cured by Hunter et al.

The teachings of Hunter et al. are set forth above.

It would have been obvious to one of ordinary skill in the art to combine the teachings of Patent '450 and Baker and utilize a polymer to drug ratio of 4:1. One of ordinary skill in the art would have been motivated to utilize this ratio when desiring a

sustained release profile as Baker teaches that is a suitable ratio to produce a sustained release of an active ingredient.

Regarding, the instant claims functional limitation in terms of release rate, Patent '450 claims the same polymers. Therefore, the same release rate would be present in Patent '450.

Therefore, the scopes of the copending claims overlap and thus they are obvious variants of one another.

Claims 42, 44-52, 55 and 57-87 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-19 of U.S. Patent No. 5725841 Baker et al. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims overlap in scope.

The instant claims are set forth above.

Patent '841 claims a metered dose inhaler containing a formulation comprising a dispersing aid comprising a chain of units derived from hydroxyacid, an amino acid, a mercapto acid and a combination of any two more of the former; a propellant; and a therapeutically effective amount of a particulate drug. Hydroxyacid is a particular species instantly claimed. The chain of the formulation can contain between about 3 and about 70 units.

Patent '841 does not claim that the dispersing aid is present in an amount four times the drug. However this deficiency is cured by Hunter et al.

The teachings of Hunter et al. are set forth above.

It would have been obvious to one of ordinary skill in the art to combine the teachings of Patent '841 and Baker and utilize a polymer to drug ratio of 4:1. One of ordinary skill in the art would have been motivated to utilize this ratio when desiring a sustained release profile as Baker teaches that is a suitable ratio to produce a sustained release of an active ingredient.

Regarding, the instant claims functional limitation in terms of release rate, Patent '841 claims the same polymers. Therefore, the same release rate would be present in Patent '841.

Therefore, the scopes of the copending claims overlap and thus they are obvious variants of one another.

Claims 42, 44-52, 55 and 57-87 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-13 of copending Application No. 10327200. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims overlap in scope.

The instant claims are set forth above.

Copending '200 claims an aerosol composition comprising a propellant, a drug, and an excipient. The excipient has the structure R_1-$(OCH_2CH_2)_z$-X. The ratio of

excipient to drug as claimed is between about 5:1 and 1:5. Therefore the excipient is present in an amount at least 4 times that of the drug.

Neither the instant application nor Copending '200 claim a specific polymer or excipient respectively. Species envisioned for the instant application overlap with those of Copending '200.

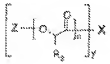
Therefore, the scopes of the copending claims overlap and thus they are obvious variants of one another.

This is a provisional obviousness-type double patenting rejection.

Claims 42, 44-52, 55 and 57-87 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-30 and 33 of copending Application No. 11816883 in view of Baker et al.

The instant claims are set forth above.

Copending '883 claims a formulation comprising a drug and a biocompatible polymer of the formula:



i

Copending '883 claims that the polymer comprises units derived from D,L-lactic acid, which is the same as instant claimed. A further limitation is that the formulation comprises a propellant.

Copending '883 does not claim that the dispersing aid is present in an amount four times the drug. However this deficiency is cured by Hunter et al.

The teachings of Hunter et al. are set forth above.

It would have been obvious to one of ordinary skill in the art to combine the teachings of Copending '883 and Baker and utilize a polymer to drug ratio of 4:1. One of ordinary skill in the art would have been motivated to utilize this ratio when desiring a sustained release profile as Baker teaches that is a suitable ratio to produce a sustained release of an active ingredient.

Regarding, the instant claims functional limitation in terms of release rate, Copending '883 claims the same polymers. Therefore, the same release rate would be present in Copending '883.

Therefore, the scopes of the copending claims overlap and thus they are obvious variants of one another.

This is a provisional obviousness-type double patenting rejection.

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ABIGAIL FISHER whose telephone number is (571)270-3502. The examiner can normally be reached on M-Th 9am-6pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Abigail Fisher
Examiner
Art Unit 1616

AF

/Johann R. Richter/

Supervisory Patent Examiner, Art Unit 1616